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Appln No. 10/040,932 Amdt date November 12, 2004 Reply to Office action of May 12, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A catheter comprising:

an elongated catheter body having a proximal end, a distal end and at least one lumen extending longitudinally therethrough; and

a mapping assembly mounted at the distal end of the catheter body and comprising at least two spines, each spine having a proximal end attached at the distal end of the catheter body and a free distal end, wherein each spine comprises:

- a support arm having shape memory;
- a non-conductive covering in surrounding relation to the support arm;
- at least one location sensor mounted in the distal end of the spine;
- a tip electrode mounted on the distal end of the spine and electrically isolated from the support arm;
- at least two ring electrodes mounted in surrounding relation to the non-conductive [eever] covering, and
- a plurality of electrode lead wires extending within the non-conductive covering, each electrode lead wire being attached to a corresponding one of the tip electrode and ring electrodes.
 - 2. (Canceled).
- 3. (Currently Amended) The catheter of claim [2] 1, wherein the location sensor is mounted at least partially in the tip electrode on each spine.
 - 4. 8. (Canceled).

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- 9. (Previously Presented) The catheter of claim 1, wherein each support arm comprises Nitinol.
- 10. (Original) The catheter of claim 1, wherein the mapping assembly is moveable between an expanded arrangement, in which each spine extends radially outward from the catheter body, and a collapsed arrangement, in which each spine is disposed generally along a longitudinal axis of the catheter body.
- 11. (Original) The catheter of claim 10, wherein, when the mapping assembly is in its expanded arrangement, each spine extends radially outwardly from the catheter body and forms a curved shape.
- 12. (Original) The catheter of claim 10, wherein, when the mapping assembly is in its expanded arrangement, each spine extends radially outwardly from the catheter body and forms a substantially straight line.
- 13. (Original) The catheter of claim 12, wherein each spine is substantially perpendicular to the longitudinal axis of the catheter body.
- 14. (Original) The catheter of claim 1, further comprising an outer mounting ring secured within the catheter body and a mounting structure positioned within the outer mounting ring, wherein each spine is secured at its proximal end between the mounting structure and the outer mounting ring.
- 15. (Original) The catheter of claim 14, wherein the mounting structure has a plurality of flat sides.

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- 16. (Original) The catheter of claim 15, wherein the number of sides on the mounting structure is equal to the number of spines of the mapping assembly.
- 17. (Original) The catheter of claim 1, further comprising a flexible tip section at the distal end of the catheter body, a control handle attached to the proximal end of the catheter body and a puller wire having a proximal end attached to a movable portion of the catheter handle and a distal end attached to the flexible tip section such that a relative longitudinal movement between the moveable portion of the catheter handle and the catheter body causes the puller wire to deflect the flexible tip section.
 - 18. 19. (Canceled).
- 20. (Currently Amended) The method of claim [19] 26, wherein the location sensor is mounted at least partially in the tip electrode of each spine.
 - 21. (Canceled).
- 22. (Previously Presented) The method of claim 26, wherein each support arm comprises Nitinol.
- 23. (Currently Amended) The [eatheter] method of claim 26, wherein, when the mapping assembly is in its expanded arrangement, each spine extends radially outwardly from the catheter body and forms a curved shape.
- 24. (Previously Presented) The method of claim 26, wherein, when the mapping assembly is in its expanded arrangement, each spine extends radially outwardly from the catheter body and forms a substantially straight line.

mapped;

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- 25. (Previously Presented) The method of claim 24, wherein each spine is substantially perpendicular to the longitudinal axis of the catheter body.
 - 26. (Original) A method for mapping a region of the heart comprising: introducing the distal end of the catheter of claim 1 into the region of the heart to be

positioning the mapping assembly so that at least one electrode from each spine is in contact with a first plurality of heart tissue;

recording electrical and locational data from the first plurality of heart tissue;

repositioning the mapping assembly such that at least one electrode from each spine contacts a second different plurality of heart tissue; and

recording electrical and locational data from the second plurality of heart tissue.

- 27. (Original) The method of claim 26, wherein the distal end of the catheter is introduced through a guiding sheath having a distal end positioned in the heart so that the spines of the mapping assembly are covered by the guiding sheath.
- 28. (Original) The method of claim 27, wherein the positioning and repositioning steps comprise moving the guiding sheath proximally relative to the mapping assembly.